PUBLIC SAFETY PSWN PROGRAM WIRELESS NETWORK

Saving Lives and Property Through Improved Interoperability

Post-Symposium Support Report—Texas

FINAL

February 2003

TABLE OF CONTENTS

1. INTRODUCTION

This report presents key findings, lessons learned, and next steps identified during the Texas Public Safety Communications Interoperability Conference in Austin, Texas, on January 7–8, 2003. The conference was jointly hosted by the Public Safety Wireless Network (PSWN) Program and the Texas Department of Public Safety (DPS), and consisted of presentations and discussions that included representation from the public safety community in Texas and from across the Nation. The information in this report is specifically intended to help conference participants continue to coordinate their efforts to develop seamless, coordinated, and integrated public safety communications for the safe, effective, and efficient protection of life and property in Texas.

> ***"Texans need and respect you for protecting their communities, no matter the risk."***
> **Greg Abbott, Attorney General, State of Texas**

Background

An environment of autonomous, localized decision making and infrastructure development has been prevalent within the state for many years. The result is a multitude of land mobile radio (LMR) systems serving individual agency needs using differing levels of technology, without direct regard for communications interoperability throughout the region or state. The resulting landscape of these independent systems is characterized by widespread duplication of infrastructure, continued use of old and outdated equipment, insufficient radio coverage within service areas, crowded or overloaded radio channels, and radio interference from neighboring jurisdictions, including those across the Mexican border. The proliferation of independent systems in the state has resulted in extensive duplication of infrastructure that has been, and will continue to be, costly to maintain and extraordinarily expensive to replace. As a result, interoperability between and among the personnel operating on these systems is a challenge.

In light of general heightened awareness of the growing threat of domestic-based incidents of terrorism and a growing likelihood of multi-agency responses, officials in Texas are actively exploring interoperability solutions as a much-needed state asset. The Texas Public Safety Communications Interoperability Conference served to bring members of the public safety community together to enhance their overall understanding of communications interoperability and to discuss current efforts to improve communications interoperability in the State of Texas.

Texas Public Safety Communications Interoperability Conference

The conference took place over two days and was attended by 241 members of the public safety community at local, state, and federal levels. The first day opened with a welcome address from Colonel Thomas A. Davis, Director, Texas DPS, and a keynote address from the Honorable Greg Abbott, Attorney General, State of Texas. The two days included presentations from—

- *Robert E. Lee, Jr., PSWN Program Manager*, on the PSWN Program mission and activities and the support the program is providing to the State of Texas

- *Robert Pletcher, Program Director, Radio Frequency (RF) Unit, Texas DPS*, on the strategies and planning necessary to accomplish statewide public safety communications interoperability in the State of Texas

- *Jack Colley, State Coordinator, Texas Division of Emergency Preparedness*, on the importance of developing coordination and partnerships to achieve interoperability

- *Jay Kimbrough, Deputy Attorney General for Criminal Justice*, on the Texas First Responder Preparedness Initiative and how it will affect public safety users.

Panel discussions included—

- *Texas elected officials*, on the legislature's role in promoting interoperability

- *Texas public safety officials*, on their own efforts to work with other organizations to enhance communications interoperability

- *Representatives from other statewide communications efforts*, on interoperability in their states and lessons learned as they develop their systems

- *Members of the Texas Interagency Radio Work Group (IRWG)*, on immediate activities to improve interoperability in Texas and initial strategies for mid- and long-term improvements

- *Representatives from regional shared systems throughout Texas*, on their efforts to provide interoperable communications to agencies within their region.

Conference Achievements and Outcomes

Never before had officials across the state with responsibilities ranging from policy formulation to field operations gathered together to focus on the interoperability challenge in Texas. The conference fostered a great spirit of cooperation, raised awareness on the issue of interoperability and how other organizations have achieved interoperability in their region, and educated participants on current efforts to improve statewide interoperability in the State of Texas.

A key conference theme noted by participants was that coordination needed to start now and not just at the scene of events. This message was echoed by Representative Pete Gallego, who stated that one of his biggest disappointments in today's public safety environment was the failure of communications due to deliberate rivalries between agencies. Traditional jurisdictional barriers must be ignored and old rivalries forgotten. Representative Gallego also explained that public safety agencies were all working toward the same goal—the protection of lives and property.

> ***"[Agencies] need to realize that we all work for the same folk, [citizens], and are part of the same team."***
> **Pete Gallego, Texas House of Representatives**

He and other legislative representatives participating in the conference stressed that agencies at all levels needed to coordinate to help develop a common statewide strategy for improving interoperability. By preparing a statewide strategy, Texas public safety agencies can ensure communications interoperability meets the needs of all stakeholders and provide a framework for ensuring success. According to the IRWG, the agencies listed in Table 1 are stakeholders in interoperability in Texas and should participate or take an active interest in the statewide interoperable public safety communications effort:

Table 1
Potential Stakeholders for Interoperable Public Safety Communications

General Stakeholders	Local Stakeholders	State Stakeholders	Federal Stakeholders
• Texas Citizens • Vendors • Neighboring States • Mexico	• City and County Public Service Agencies • Local Police • Volunteer Fire Departments • Emergency Medical Services • 9-1-1 Dispatch Centers • Local government leaders • Regional Councils of Government (COG) • Texas Firemen's and Fire Marshals' Association • Sheriffs' Association of Texas • Constables	• Texas Department of Public Safety • Texas Department of Transportation • Texas Department of Criminal Justice • Texas Parks and Wildlife • Texas Youth Commission • Texas Forest Service • Division of Emergency Management • Texas National Guard • Lower Colorado River Authority • Texas Department of Health • Texas Engineering Extension Service • General Land Office • Office of the Governor • State Legislature	• U.S. Border Patrol • Drug Enforcement Administration • U.S. Customs Service • Federal Bureau of Investigation • U.S. Coast Guard • U.S. Secret Service • Bureau of Alcohol, Tobacco, and Firearms • U.S. Marshals Service • Department of Homeland Security • National Drug Control Policy

Interoperability is not a new issue for public safety. Public safety agencies have dealt with coordination issues during event responses for years. While September 11 is a graphic example of such coordination challenges, several other events highlight the need for communications interoperability. In his keynote speech, Texas Attorney General, Greg Abbott, referenced events in other states, including the Columbine shootings in Colorado and the Oklahoma City bombing. It took these events before Colorado and Oklahoma realized the deficiencies in their public safety radio communications. The Attorney General stressed that Texas needed to be prepared for an event that would require a large coordination effort and could not afford to ignore communications interoperability until such an event occurred.

The conference also raised awareness of interoperability and current coordination efforts among public safety agencies, state legislature, and other states. Many agencies were unaware of

the numerous efforts under way to address statewide communications interoperability. The effectiveness of the conference in raising awareness of interoperability is highlighted by the fact that conference host, Robert Pletcher, received nearly 100 requests from conference attendees seeking more information on how they could be included and continue the momentum generated by the conference. In response, the IRWG is now planning to host conferences in six other regions of the state to raise awareness of interoperability. Many attendees have also e-mailed Mr. Pletcher with invitations to speak about the IRWG's efforts to improve interoperability at their organizations' meetings. Finally, legislative representatives have begun inviting various communications officials to meet with them and talk about the issue of interoperability and what can be done to achieve it.

2. CHALLENGES AFFECTING PUBLIC SAFETY WIRELESS COMUNICATIONS IN TEXAS

> ***"Nowhere is the challenge [to improve interoperability] larger than in Texas."***
> **Greg Abbott, Attorney General, State of Texas**

The need for and challenges to communications interoperability in Texas are as large as the state. Like many states, Texas has a critical need for interoperable communications among public safety officials at all levels of government. However, in addition, it has many unique features that amplify this need. For example, Texas—

- Has significant illegal immigration and homeland security border control issues
- Serves as a major North American Free Trade Agreement (NAFTA) trade corridor
- Contains three regions identified as High Intensity Drug Trafficking Areas (HIDTA).

While trying to improve their communications interoperability, Texans are facing many barriers and challenges. These include significant geographical challenges, technological barriers, and funding hurdles.

Texas' Geography

The state has many geographical challenges that affect public safety wireless communications. Probably the most evident challenge is its size—which is both an operational and technical challenge. Texas covers 267,339 square miles, which is nearly three times larger than Rhode Island, Connecticut, New Hampshire, Vermont, New York, and New Jersey combined. Texas also contains 254 counties and about 21 million residents. Another challenge is Texas' diverse geography. It is home to some of the Nation's largest metropolitan cities, as well as vast expanses of sparsely populated rural land. Coastal plains in the east, "Hill Country" in Central Texas, and the mountains in the far west are just a few of Texas' geographical features that pose challenges to public safety communications system design.

Each region has unique operational requirements and faces its own challenges to system design. This facet makes it difficult for any statewide effort to include representation from all stakeholders around the state, who have differing needs and problems to address, and still be productive in moving forward. The idea of a single shared statewide radio system becomes almost unimaginable when looking at the size and characteristics of the different regions that system would have to cover as well as the costs associated with this.

Technological Barriers

Another major challenge for Texas is overcoming the technology barriers between the disparate systems of the public safety agencies. Several different aspects of these systems cause interoperability issues. The first of these aspects is the frequency band on which the radio systems operate. Most state and federal agencies in Texas use very high frequency (VHF) systems. Most local agencies also use the VHF band, with the exception of those operating on major metropolitan 800 megahertz (MHz) regional systems and those operating on the Lower Colorado River Authority (LCRA) system. Additionally, state and local agencies use varying system

architectures (i.e., conventional and trunked) and proprietary technologies (e.g., Motorola and M/A-COM). For example, San Antonio and Austin both have 800 MHz trunked systems. However, San Antonio is implementing a M/A-COM system, and Austin has a Motorola system. If San Antonio firefighters assisted Austin firefighters through their mutual-aid agreement, the 800 MHz San Antonio Fire Department radios would not work on the Austin 800 MHz system when San Antonio personnel arrived at the scene. Below are some examples of system types throughout Texas that were highlighted at the conference.

Table 2
System Types Throughout Texas

Agency	System Type
Federal	
U.S. Border Patrol	800 MHz Conventional
Bureau of Land Management	VHF High Band Conventional
State	
Texas Alcoholic Beverage Commission	VHF Conventional
Texas Department of Criminal Justice	VHF High Band Conventional
Texas Forest Service	VHF High Band Conventional
Texas Department of Public Safety	VHF Conventional
Texas Department of Transportation	VHF Low Band Conventional
Local/Regional	
Galveston	800 MHz Trunked
San Antonio	800 MHz Trunked
Travis County/Austin	800 MHz Trunked
LCRA	900 MHz Trunked
Harris County/Houston	800 MHz Trunked

To achieve interoperability between non-shared systems, some agencies practice techniques such as frequency or radio swapping. Frequency swapping can yield on-demand, real-time interoperability only for agencies with compatible systems that have made arrangements to program their radios with each other's frequencies prior to an incident. Interoperability through radio swapping is contingent on the number of radios available at the scene of an incident. Additionally, if an officer from an agency is coordinating on another agency's radios, he will not be able to communicate with his own dispatchers and the dispatchers will be unaware of the activities in which the officer is participating.

As an alternative to interoperability on an LMR system, some public safety officials use personally purchased cellular telephones to communicate with other agencies. However, these officials are limited to person-to-person communication and cannot broadcast to others when needed. Additionally, cellular telephones are limited to the coverage and reliability of the commercial wireless provider, and the user must know the telephone number of the agency he is trying to call.

Unfortunately, many agencies do not have interoperability solutions in place and simply cannot interoperate. In fact, a few large agencies cannot even interoperate between their own divisions. For example, a Texas DPS Highway Patrol officer may pull over a vehicle in a county outside of his usual patrol area and require emergency assistance. Because an interoperability solution has not been implemented between the Texas DPS system and the local sheriff's system, the officer cannot contact local authorities for assistance. In turn, a local sheriff, who is one mile

away, remains unaware of the situation, while the closest DPS officer may be too far away to assist. Because of this interoperability shortfall, both the officer and citizens may be at risk.

Funding Hurdles

The budget shortfall in Texas is severe. One week prior to the conference, the Texas budget shortfall was announced to be nearly double what was expected. While the legislature sees the need to fund improvements to communications, they do not have the money to do so. As Representative Ray Allen phrased it, he would love to provide the state with a brand new top-of-the-line "Lexus" system. However, with the current budget shortage, Texas can only afford a "'57 Chevy" system that provides only the necessary functionality. Representative Gallego suggested that the public safety community needed to do everything to "stretch the dollar" without sacrificing job efficiency. This might include anything from refurbishing old equipment to consolidating budget requests. Additionally, the legislators stressed that it was unlikely any project would not receive funding unless a systematic approach or strategy was presented for using that funding. As the panelists explained, it would be easier for legislators to support a unified agenda.

> ***"Until you have a strategy, it is not going to get funded."***
> **Ken Armbrister, Senator, State of Texas**

To complicate matters even more, most of Texas is very rural, and available funds are in short supply at the local level. Shrinking local tax revenues are limiting the amount of money available for communications improvements across the state. The fact that many agencies have not upgraded their systems in 30 years due to budget constraints means that these agencies are now experiencing increased interoperability issues when trying to coordinate with agencies that have newer systems.

3. TRENDS IN IMPROVING PUBLIC SAFETY WIRELESS COMMUNICATIONS INTEROPERABILITY

Throughout the conference, speakers presented examples of how their agencies had improved wireless communications. Because every region or agency has unique communications requirements, each conference speaker presented a different story on how his agency was improving wireless communications to allow public safety agencies to better interoperate with one another. These stories serve as examples of how agencies in Texas and throughout the country are making progress in advancing first responders' interoperability. Specifically, the following stories shed light on the many communications solutions being implemented within the public safety community.

Other Statewide Communications Efforts

Don Appleby—Project Director, Radio Systems Development, Commonwealth Technology Center, Governor's Office of Administration, Commonwealth of Pennsylvania

The largest hurdles the Commonwealth of Pennsylvania faced when improving public safety communications were obtaining money and getting the project off the ground. When the project began, the staff estimated the amount of money it would take to build a new statewide radio system and presented it to the legislature. When representatives of the Pennsylvania Public Safety Radio Project requested the project's estimated $400 million price tag from the legislature, the legislature directed them to come back with a realistic request. The project ultimately received funding when it lowered its estimate. Project planners accomplished this by employing cost efficiency techniques like consolidating infrastructure and then presented the funding request to the legislature as an investment opportunity, showing the amount of cost savings that would occur if the project was funded.

> ***"Nothing in the state funding process happens on its merit, alone. You've got a hard battle."***
> **Don Appleby, Project Director, Radio Systems Development, Commonwealth of Pennsylvania**

Mr. Appleby commented that seven years ago, Pennsylvania was in a similar situation to that faced by Texas today. Due to strong strategic planning and perseverance, the Pennsylvania public safety 800 MHz system is beginning the operational implementation phase. It covers 45,000 square miles and services 25,000 radios from 23 state agencies. Although it was originally envisioned to be a network for state agencies, the project has grown to allow local participation. Since then, three counties have joined the system. The project is currently speaking with seven additional counties regarding their interest in participating in the system and working with the Governor's Office to obtain federal funding for additional counties.

Kourosh Bastani—Bureau Chief, Technology Office, State of Florida

Florida's efforts to improve interoperability began in 1984 as a vision of a single law enforcement network. Because of the complexity of building such a network, it was implemented in five phases. In 2000, the state ran out of money with only two of the five phases completed. To compensate for funding shortfalls, the legislature established a trust fund that yields about $12

million per year from vehicle registration fees. However, this was still not enough to continue the implementation of the radio system.

In spite of this situation, Florida was able to turn its liabilities into assets and complete its statewide radio system. The State of Florida decided to explore public–private partnership options to supplement their current revenue stream. This endeavor produced a 20-year partnership between the State of Florida and M/A-COM, during which M/A-COM agreed to develop the remaining phases in return for the public safety trust fund profits. In addition, M/A-COM granted the State of Florida $300,000 in purchase credit in return for ownership of Florida's existing infrastructure equipment. User agencies are largely responsible for buying mobile and portable units. However, this purchase credit gives the state the ability to purchase portables for agencies that cannot afford them.

To facilitate interagency coordination, Florida has set up interagency work groups on a regional basis. Interoperability with agencies outside of the network is primarily accomplished with patches and mutual aid channels. Florida has also integrated national mutual aid channels.

Captain Thomas Cowper—Associate Director, Statewide Wireless Network, State of New York

The project to improve New York's public safety communications interoperability was begun in 1997 by the New York State Police. The driving force behind this project is to improve statewide communications for New York's public safety agencies, as well as provide interagency communications at all levels of government. Many local and state agencies currently operate antiquated and unreliable radio systems. Most state agencies are participating in the Statewide Wireless Network and almost all New York counties have expressed interest in participating. As the project moves forward with implementation, the Statewide Wireless Network will continue to encourage partnerships with local agencies.

Now under the State Office of Wireless Technology, the Statewide Wireless Network project is receiving proposals from vendors to start implementing the network. Since the total system cost is estimated at $500 million to build, New York plans to lease its system with the option to buy it. The leasing costs are funded through cellular telephone 911 fees.

Bill Dean—Executive Director, Metropolitan Radio Board, State of Minnesota

Minnesota is implementing a nine-county system around the Minneapolis metropolitan area. While not a statewide network, the system will cover a region that contains 60 percent of Minnesota's population and will support 10,000 users. The system will use multiple layers of shared infrastructure owned by the state, counties, city, and private emergency medical services (EMS) companies and is the beta test site for Motorola Astro 6.1 making it the first all digital voice-over Internet Protocol Project 25 system.

A committee composed mostly of local agencies governs the Minnesota system. This model was employed to give input and control to the local users. The system is primarily funded by state bonds, highway funds, and a 911 surcharge, and any subsystems on the network are funded by their respective agency.

Texas Regional Shared Systems

Jimmy Dan Havins—Manager, Telecommunications Operations, LCRA

LCRA is not a state agency; it is a conservation district whose mission is to route electricity to the "Hill Country" of Texas. In 1996, LCRA began construction on a 900 MHz trunked voice and data system. While originally conceived to address internal communications issues within LCRA, the system has since been built out to provide a network for local public safety agencies within the region. Currently, 26 local agencies operate on the LCRA system.

For interoperability, LCRA ties conventional channels used by local agencies into the system. Additionally, LCRA is working to implement interoperability between its system and the new San Antonio system. As an experiment, LCRA tied its system with the north and south utilities systems via a switch, permitting users to talk on all three systems and cover the majority of Texas.

Sheriff D'Wayne Jernigan—Val Verde County, Middle Rio Grande Council of Government

Sheriff Jernigan works with the Rio Grande development council, which is working to break down barriers between agencies in the nine counties of the Middle Rio Grande COG. Through coordination, the council is trying to identify the communications needs of its local agencies and identify ways to meet those needs. They are currently working together on a white paper to explain the state of their public safety communications and developing memoranda of understanding (MOU) to work together in the region.

Larry Orr—Managing Director, Regional Radio Center, Harris County Central Technology

Harris County currently operates an 800 MHz trunked Motorola system that services 271 departments. This is accomplished through 75 interlocal agreements between the agencies and the county. Harris County is the primary owner of the system, and user agencies either buy or lease radios from the county as well as pay an airtime fee. When the system was first implemented, Harris County charged very low airtime fees to entice new users.

Due to the growing need for improved communications in the surrounding counties, the Harris County system eventually expanded to include four other counties. This presented a challenge, because counties could not sign MOUs as individual agencies could. To solve this problem, Harris County and the other counties involved established interlocal agreements through the County Commissioner's Court.

Robert Turner—Wireless Communication Services Officer, City of Austin

Servicing Texas' capital city and surrounding areas, the Austin/Travis County joint radio system will support 50 different agencies and 10,000 users. The system is currently entering its testing phase and public safety is expected to be on the system within nine months. To fund this system, each agency contributing to the development of the regional system is establishing its own funding systems and funding its portion of the system costs. Any additional agencies that join the system will be required to pay a monthly fee to join the system.

In addition to the radio system, the same agencies are implementing a communications center, common numbering schemes, nomenclature, and operational procedures. These will be used to improve the operational issues that afflict public safety.

Victor Perez—Assistant Information Services Manager, Communications Division, City of San Antonio

San Antonio is implementing an 800 MHz trunked M/A-COM system that is currently three months away from being active. The system will provide service to local public safety agencies within San Antonio and Bexar County, as well as several state and federal agencies operating in the San Antonio area. The City of San Antonio issued bonds to fund the radio system and will charge fees to user agencies.

San Antonio believes that radio swapping is not the answer for interoperability and is looking into long-term solutions for interoperability with other systems. One of these examples is its work to integrate the LCRA system to achieve interoperability with local public safety agencies that are operating on the LCRA system in the San Antonio area. In addition, after speaking with Robert Turner at the conference, Mr. Perez learned northern Austin and southern San Antonio used the same frequencies. These frequencies could possibly provide a method for the two cities to interoperate.

4. EXISTING INITIATIVES FOR IMPROVING INTEROPERABILITY

While challenges persist, many initiatives currently exist to provide solutions for interoperability at all levels. The Governor's Office and the Division of Emergency Management at Texas DPS have developed solutions for coordinating emergency preparedness and response efforts statewide. Meanwhile, the IRWG and the Sheriffs' Association of Texas, with help from the Integrated Center for Homeland Security (ICHS), the PSWN Program, and the National Institute of Justice, are working to develop solutions specific to statewide communications interoperability. When taken together, these initial steps provide a solid framework for building lasting interoperability improvements.

Emergency Responder Preparedness: Council of Government (COG) Coordination

Jay Kimbrough—Deputy Attorney General for Criminal Justice, Texas Attorney General's Office

In response to the September 11 attacks and the creation of the Office of Homeland Security in the Federal Government, Governor Rick Perry created the Governor's Task Force on Homeland Security. The task force's duties were to advise the governor on homeland security issues so that threats could be identified and extinguished before they occurred. An important output of the task force was the Texas First Responder Preparedness Program.

The Texas First Responder Preparedness Program leads strategic planning efforts for Texas homeland security and plays an instrumental role in improving public safety interoperability. To address coordination efforts during emergency response, this program created the "Strategies for Texas First Responder Preparedness," which provides a framework "to build on Texas' current disaster response network and provide state, regional, and local officials with a means of developing regionally based, interlocking, and mutually supporting terrorism preparedness programs." The Governor's Office is working closely with the IRWG to ensure a successful strategy for Texas public safety communications interoperability as well as one that complements the state's overall strategy.

> ***"By thinking and planning regionally, all areas of the state can be covered through mutual-aid agreements and interlocking zones of response."***
> **Jay Kimbrough, Deputy Attorney General for Criminal Justice**

The Texas First Responder Preparedness Program leverages the COGs to improve emergency response. In Texas, COGs are commonly used governing entities to coordinate planning efforts that span local government boundaries. The councils are voluntary associations of local governments that serve as coordinating bodies to help overcome regional challenges. Although council decisions are not binding on local governments, COGs do provide a collaborative approach to solve issues of regional concern.

Under the Texas First Responder Preparedness Program, local response and coordination during catastrophic events are regionalized through the COG Regional Response Network. In effect, the state is split geographically into 24 regional councils. To develop this response network, the First Responder Preparedness Program drew a 200-mile radius circle around each COG as displayed in Figure 1. These circles designate the regional councils that will coordinate during emergency response situations where an adjacent regional council needs assistance.

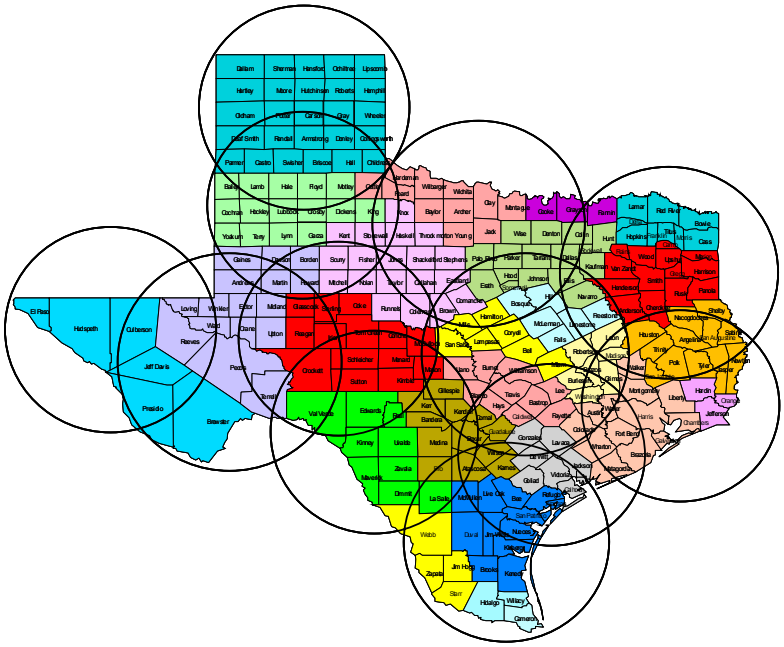

Figure 1
COG Regional Response Network

For example, if a dirty bomb was set off and winds carried the debris southeast as depicted in Figure 2, COGs contained within the circles illustrated would respond to assist.
Mr. Kimbrough likened this regional response approach to the way smaller states assisted each other during large-scale events.

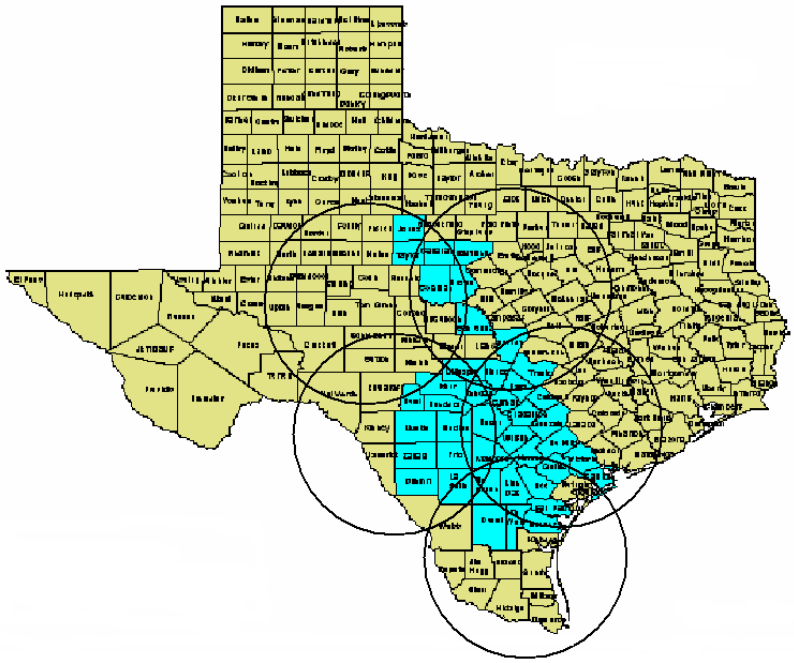

Figure 2
Example: COGs Responding to a Dirty Bomb

By jointly working together, regional councils are the linchpins for making the Texas First Responder Preparedness Program successful. They will also be instrumental in the dispersion of federal homeland security funding, when it becomes available. The Governor's Office anticipates that the bulk of funding earmarked for the local level will be dispersed through the regional councils. In turn, regional councils will need to be knowledgeable of their region's assets and needs in order to appropriately disperse funds.

Emergency Management: Disaster Districts

Jack Colley—State Coordinator, Texas Division of Emergency Management

Texas suffers from many natural disasters each year that require emergency response coordination. For example, from June 2001 to November 2002, 188 counties were declared drought and flood disasters. In 2002, 199 counties were affected by West Nile Virus. These natural disasters can affect regions the size of several other states combined and often require assistance from neighboring regions.

To address response coordination in large emergency events such as these, the Texas Division of Emergency Management developed a statewide coordination plan. The plan creates regionalized emergency response capabilities by leveraging Disaster Districts and corresponding Disaster District Heads. Figure 3 illustrates the 14 Disaster Districts throughout Texas. The icons denote the location of the Disaster District Heads. During catastrophic events, the Disaster District Head coordinates all the agencies that respond to an event. This coordination will include, but not be limited to, wireless communications.

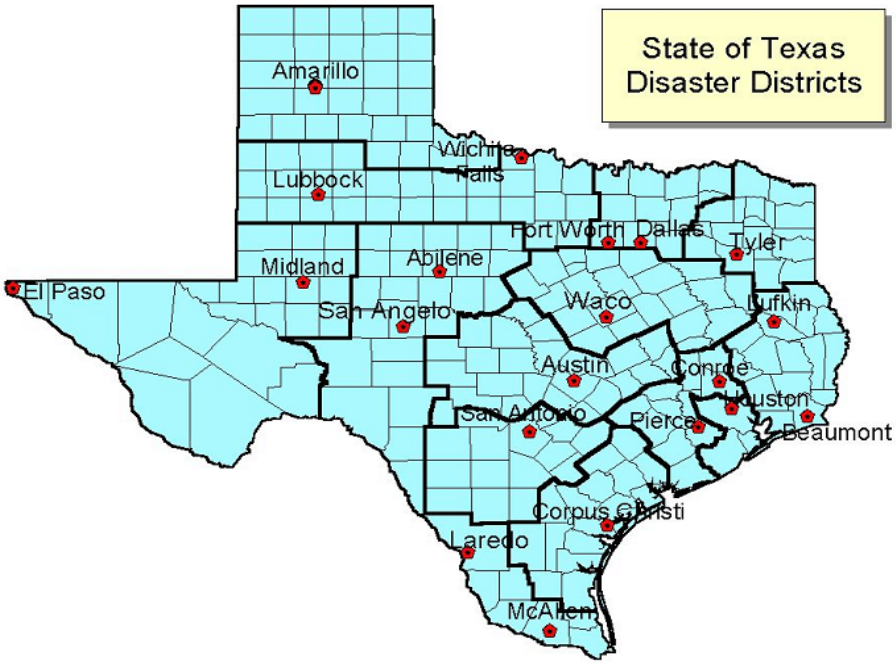

Figure 3
Texas Disaster Districts

Within each Disaster District, the Disaster District Head is responsible for developing a plan to handle emergency management within his or her jurisdiction. These regional plans address communications as well as all phases of emergency management. Mr. Colley suggests that local

agencies should become familiar with their respective Disaster District Heads, advise them on issues facing communications coordination, and work with them to develop an appropriate emergency management plan for the region.

Strategies for the Improving Interoperability: Interagency Radio Work Group

Members of the IRWG

The IRWG is addressing communications issues and statewide public safety communications interoperability in cooperation with the Texas First Responder Preparedness Program. In the summer of 2002, the RF Unit within Texas DPS was charged with developing a strategy and planning for radio interoperability statewide. To accomplish this, the RF Unit reestablished the Statewide Radio Task Force, now named the IRWG. The IRWG is an informal group of representatives from state agencies, as well as LCRA and the Sheriffs' Association of Texas, that is collaboratively working to promote interoperability in general and improve public safety communications interoperability statewide. Agency directors representing IRWG member agencies met and confirmed their support for the goal of a unified public safety communications solution. Currently, the IRWG consists of representatives from the following agencies:

- Texas Alcoholic Beverage Commission
- Texas Department of Criminal Justice
- Texas Department of Health
- Texas Department of Public Safety
- Texas Department of Transportation
- Texas Forest Service
- Texas Parks and Wildlife Department
- Texas Youth Commission
- Lower Colorado River Authority
- Sheriffs' Association of Texas.

The IRWG is actively exploring interoperability strategies and has developed preliminary near-, mid-, and long-term goals. In the near-term, the IRWG is tasked with identifying and evaluating potential interoperability solutions and potential funding sources. In addition, the group is also identifying technical and operational solutions that can be implemented using existing funds to provide some degree of interoperability in the interim. In the mid-term, the IRWG plans to implement proven interoperability solutions throughout the state. In the long-term, the IRWG plans to implement a statewide radio network.

The IRWG has made initial progress as demonstrated by the immediate solution presented at the conference. This near-term solution redefines the existing interoperability channels prevalent throughout the state. Many VHF interoperability channels have been created in the past 25 years. However, the IRWG found that agencies were using these frequencies without any common scheme or nomenclature. Because of improper use, agencies no longer tune to the interoperability channels to communicate with other agencies, sometimes deprogram them out of their radios completely, and do not monitor them at dispatch centers. Additionally, many of these interoperability channels were intended for specific disciplines (i.e., fire, EMS, and law enforcement) and did not allow for interoperability between disciplines.

To emphasize the problems of the current channel scheme, Senator Ken Armbrister, whose career in law enforcement spanned from age 21 until he ran for office, recalled when inter-city channels were the "end all" solution for interoperability. During his public safety career, Senator Armbrister used the inter-city channels only once—to find a restaurant.

To resolve this challenge, the IRWG identified the current interoperability frequencies and developed common names and standardized uses. With these changes, and the appropriate training, agencies can begin to rely on the interoperability channels for on-scene communications. Additionally, the IRWG plans to re-license these channels so that dispatch centers will not have to monitor the mobile-to-mobile channels, reducing the unnecessary transmissions that come into the dispatch centers and, in turn, reducing the tendency for dispatchers to stop monitoring the interoperability frequencies.

Table 3 details the frequencies that were identified and their proposed names and uses. The state agencies have endorsed the use of these frequencies, and the IRWG intends to recommend them to the local and federal agencies.

Table 3
Proposed Common Interoperability Channels for Texas

Interoperable Name	Current Name	Receive	Transmit	Tone	Recommended Use
"TEX A" (Alpha Display on Radio)[When Calling Say: "Texas Alpha/Adam"]	Intercity Mobile-to-Base	155.370	154.950	None	Contact between law enforcement base radios and interagency mobile/portable radios
"TEX B" (Alpha Display on Radio)[When Calling Say:"Texas Bravo/Baker"]	Intercity Mobile or Car-to-Car	154.950	154.950	None	Contact between interagency mobile/portable radios
"TEX C" (Alpha Display on Radio)[When Calling Say: "Texas Charlie/Charles"]	National Law Enforcement Interoperability Channel	155.475	155.475	None	PRIMARY: Contact between interagency law enforcement agencies SECONDARY: Determined by the on-scene incident commander as needed
"TEX D" (Alpha Display on Radio)[When Calling Say: "Texas Delta/David"]	Fire Mutual Aid "A"	154.280	154.280	None	PRIMARY: Contact between interagency fire agencies SECONDARY: Determined by the on-scene incident commander as needed
"TEX E" (Alpha Display on Radio)[When Calling Say:"Texas Echo/Edward"]	Fire Mutual Aid "B"	154.265	154.265	None	PRIMARY: Contact between interagency fire agencies SECONDARY: Determined by the on-scene incident commander as needed
"TEX F" (Alpha Display on Radio)[When Calling Say: "Texas Foxtrot/Frank"]	Fire Mutual Aid "C"	154.295	154.295	None	PRIMARY: Contact between interagency fire agencies SECONDARY: Determined by the on-scene incident commander as needed
"TEX G" (Alpha Display on Radio) [When Calling Say: "Texas Golf/George"]	Hospital and EMS Radio Network	155.340	155.340	None	PRIMARY: Contact between hospitals and EMS providers SECONDARY: Determined by the on-scene incident commander as needed

While the interim solution raised questions regarding the new VHF interoperability channels' ability to resolve interoperability problems with ultra high frequency and 800 MHz systems prevalent in large metropolitan areas, IRWG panelists assured participants that, as with all of the proposed strategies, these plans were only preliminary. Panelists explained that the IRWG was looking for a solution that would provide immediate interoperability benefits and found that the majority of public safety agencies at all levels of government used VHF systems in Texas.

Interstate I-35 Corridor Pilot Project

Joe Peters—Manager, Telecommunications Interoperability, Sheriffs' Association of Texas

In an effort to achieve IRWG's short- and mid-term goals, the I-35 corridor stretching from Austin to Laredo was identified as a possible test bed for evaluating potential interoperability solutions. The I-35 corridor was chosen for several reasons. In Laredo, agencies address homeland security issues along the border. I-35 is a major NAFTA trade route and identified as a HIDTA for drug trafficking. Radio systems along the corridor represent almost every type of technology used in Texas. In addition, the geography and demographics along I-35 represent almost every type of challenge that other regions face. The objective for this project is to identify and implement interoperability solutions for disparate systems along the corridor that can be duplicated throughout the state.

While the Sheriffs' Association of Texas is leading this effort to acquire funding for equipment and implementation, the IRWG is working closely with the ICHS, headquartered out of Texas A&M, the National Institutes of Justice, and the PSWN Program to develop and define the pilot project. Currently, key public safety agencies at local, state, and federal levels along the I-35 corridor are being interviewed. From these interviews, the coordinated effort will develop a technical interoperability strategy for the state. This strategy will identify opportunities for improving operations and specific interoperability needs between state and federal agencies, describe current systems and agency interoperability at a high level, and present immediate-term technical interoperability recommendations.

4. LESSONS LEARNED

The Texas Public Safety Communications Interoperability Conference allowed members of the public safety community to present their varied communications expertise and experiences. This section highlights the key lessons learned that could help improve Texas public safety wireless communications in the future. These lessons learned are not all inclusive but do represent some of the most common themes and best practices.

Leadership and Coordination

- Local, state, and federal public safety agencies need to ensure a coordinated effort for improving wireless communications interoperability in Texas.
- One central information source is needed to coordinate interoperability efforts.
- Homeland security preparedness and federal funding will be coordinated regionally through the COGs.
- Executive leadership and collaboration are vital to success.
- Statewide strategy planners should avoid the perception of state-imposed standards or requirements without local input.
- Local agencies should have input into decisions during the development of the statewide solution.

Legislation and Decision Making

- Public safety agencies need to communicate requirements and priorities in a coordinated fashion to Texas decision makers.
- The Texas budget shortfall is severe.
- It is easier for legislators to support a common unified agenda when appropriating funds.

System Design and Implementation

- No single interoperability solution exists that fits everyone.
- Radio system planners should concentrate on defining functional requirements first and then make technical decisions based those requirements.
- Radio system planners should focus on the needs of all first responders instead of a single public safety discipline.

Training

- Training should be developed in a scenario-based format.
- Training should be tailored to agency needs.
- An efficient and economical way to conduct training is to "train the trainers"—have peers train peers.
- When planning for training, you should quadruple the time you think should be allotted to training.

5. NEXT STEPS

This section presents the next steps that the Texas public safety community can take to continue its efforts to improve its wireless communications networks. The activities listed below are derived from lessons learned at the conference and reflect information contained in the previous sections of this report. The next steps are segmented by audience.

Texas Public Safety Community

- Continue an active interest in IRWG efforts and participate where possible.
- Look past jurisdictional boundaries and encourage other agencies to do the same.
- Participate in pilot projects.
- Become knowledgeable about the governor's homeland security initiatives and the Texas First Responder Preparedness Program, and learn how they affect your agency.
- Create and present to decision makers a strategy or plan for using requested equipment or resources.
- Present budget requests as investment opportunities and relate them to the return on investment the citizens will receive.
- Detail budget request line items and why they are important.
- Detail a capital plan for funding efforts over a period of time.
- Think creatively to produce funding strategies.
- Identify and implement improvements to communications that can be made without the outlay of large costs.
- Share existing resources where possible.
- Recycle or donate obsolete radios and equipment.
- Develop and present a plan for sharing systems and resources to avoid duplication where possible.
- Coordinate with other agencies and make joint budget requests where it makes sense.
- Assess your region's needs and document where equipment is needed.
- Coordinate with and inform your COG of your requirements and priorities.
- Encourage your COGs to participate or maintain an interest in IRWG activities.

Senior Texas Decision Makers

- Be informed and stay actively engaged on the latest developments in public safety interoperability in your area.
- Continue to encourage the coordination of agencies toward a common strategy for interoperable communications.
- Become knowledgeable about the Governor's homeland security initiatives and the Texas First Responder Preparedness Program, and learn how they affect your agency.

- Educate agency staff on the lack of and critical need for interoperability.
- Encourage agency staff to develop justifications for budget requests.
- Encourage entrepreneurship among staff.
- Support communications interoperability legislation on behalf of your agency.
- Encourage your agency to coordinate with others.
- Support the IRWG in becoming the state authority on public safety communications interoperability.
- Encourage agency coordination with the regional council.

Texas Legislature

- Be informed and stay actively engaged in the communications issues affecting public safety interoperability.
- Continue to encourage the coordination of agencies toward a common strategy for interoperable communications.
- Educate constituents on the lack of and critical need for interoperability.
- Help public safety agencies develop innovative funding strategies.

APPENDIX A—CONFERENCE SPEAKERS

Mr. David Abernathy, *Assistant Chief Regional Fire Coordinator and Homeland Security Coordinator, Texas Forest Service*

The Honorable Greg Abbott, *Attorney General, State of Texas*

Mr. C. Tommy Anderson, *President, Texas State Firemen and Fire Marshals Association*

The Honorable Ray Allen, *Texas House of Representatives*

Mr. Don Appleby, *Project Director, Radio Systems Development, Commonwealth Technology Center, Governor's Office of Administration, Commonwealth of Pennsylvania*

The Honorable Ken Armbrister, *Senator, State of Texas*

Mr. Kourosh Bastani, *Bureau Chief, Technology Office, State of Florida*

Mr. Brad Bearden, *Communications System Manager, Texas Alcoholic Beverage Commission*

Chief Paul Berg, *Chief Patrol Agent, U.S. Border Patrol*

Mr. Jack Colley, *State Coordinator, Texas Division of Emergency Management*

Mr. Greg Colson, *Communications Systems Manager, Texas Department of Criminal Justice*

Captain Thomas Cowper, *Associate Director, Statewide Wireless Network, State of New York*

Colonel Thomas A. Davis, *Director, Texas Department of Public Safety (DPS)*

Mr. Bill Dean, *Executive Director, Metropolitan Radio Board, State of Minnesota*

Mr. Gordon Dilmore, *Advanced Generation of Interoperability for Law Enforcement, National Institute of Justice*

Chief Jimmy Fawcett, *Chief of Police, Farmers Branch Police Department and Texas Police Chiefs Association*

Mr. Al Fernandez, *Electronics Division, U.S. Border Patrol*

The Honorable Pete Gallego, *Texas House of Representatives*

Mr. Jimmy Don Havins, *Manager, Telecommunications Operations, Lower Colorado River Authority*

Sheriff D'Wayne Jernigan, *Val Verde County, Middle Rio Grande Council of Government*

Mr. Jay Kimbrough, *Deputy Attorney General for Criminal Justice, Texas Attorney General's Office*

Mr. Shawn Lange, *Texas Parks and Wildlife Department*

Mr. Robert E. Lee, Jr., *Public Safety Wireless Network (PSWN) Program Manager, Department of Justice*

Mr. Rick Murphy, *PSWN Program Manager, Department of the Treasury*

Mr. Jerry Newbury, *Manager, Fleet Operations, Texas DPS*

Mr. Ken Nicolas, *Executive Director of the Governor's Criminal Justice Division*

Mr. Larry Orr, *Managing Director, Regional Radio Center, Harris County Central Technology*

Mr. Robert Packert, *Traffic Management Section, Operations Division, Texas Department of Transportation*

Mr. Victor Perez, *Assistant Information Services Manager, Communications Division, City of San Antonio*

Mr. Joe Peters, Manager, *Telecommunications Interoperability, Sheriffs' Association of Texas*

Mr. Robert Pletcher, *Program Director, Radio Frequency (RF) Unit, Texas DPS*

Mr. Elbert Simpson, *Telecommunications Specialist, Texas Youth Commission*

Mr. Tom Tolman, *National Law Enforcement and Corrections Technology Center, National Institute of Justice*

Mr. Robert Turner, *Wireless Communication Services Officer, City of Austin*

APPENDIX B—ACRONYMS

COG	Council of Government
DPS	Department of Public Safety
EMS	Emergency Management Services
HIDTA	High Intensity Drug Trafficking Area
ICHS	Integrated Center for Homeland Security
IRWG	Interagency Radio Work Group
LCRA	Lower Colorado River Authority
LMR	Land Mobile Radio
MHz	Megahertz
MOU	Memorandum of Understanding
NAFTA	North American Free Trade Agreement
RF	Radio Frequency
VHF	Very High Frequency